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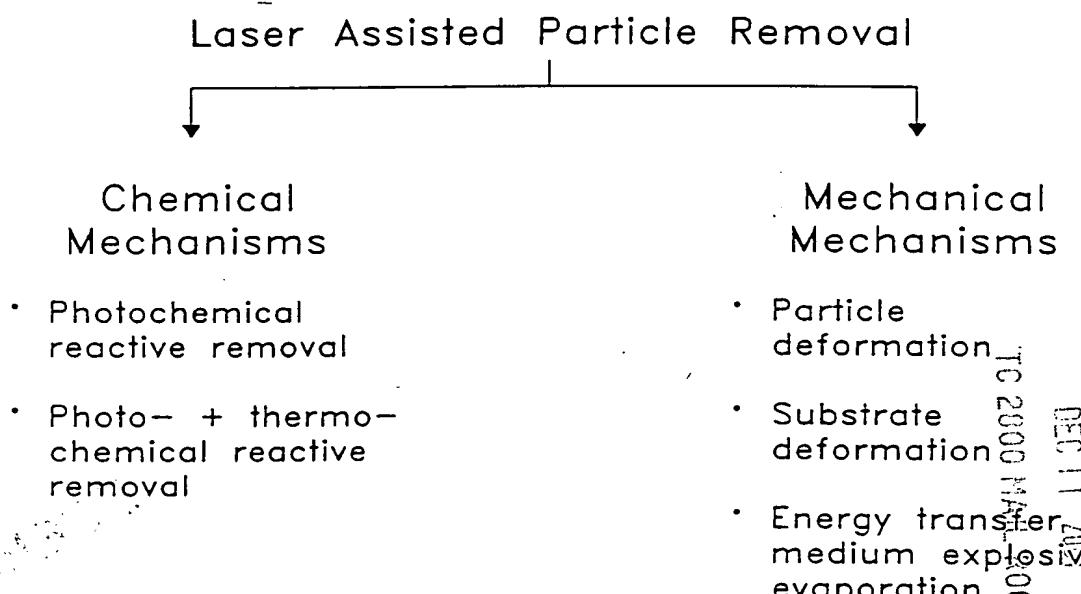


FIG. 1

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TC 2800 MAIL ROOM

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OCT - 1 2002
TC 1700 MAIL ROOM

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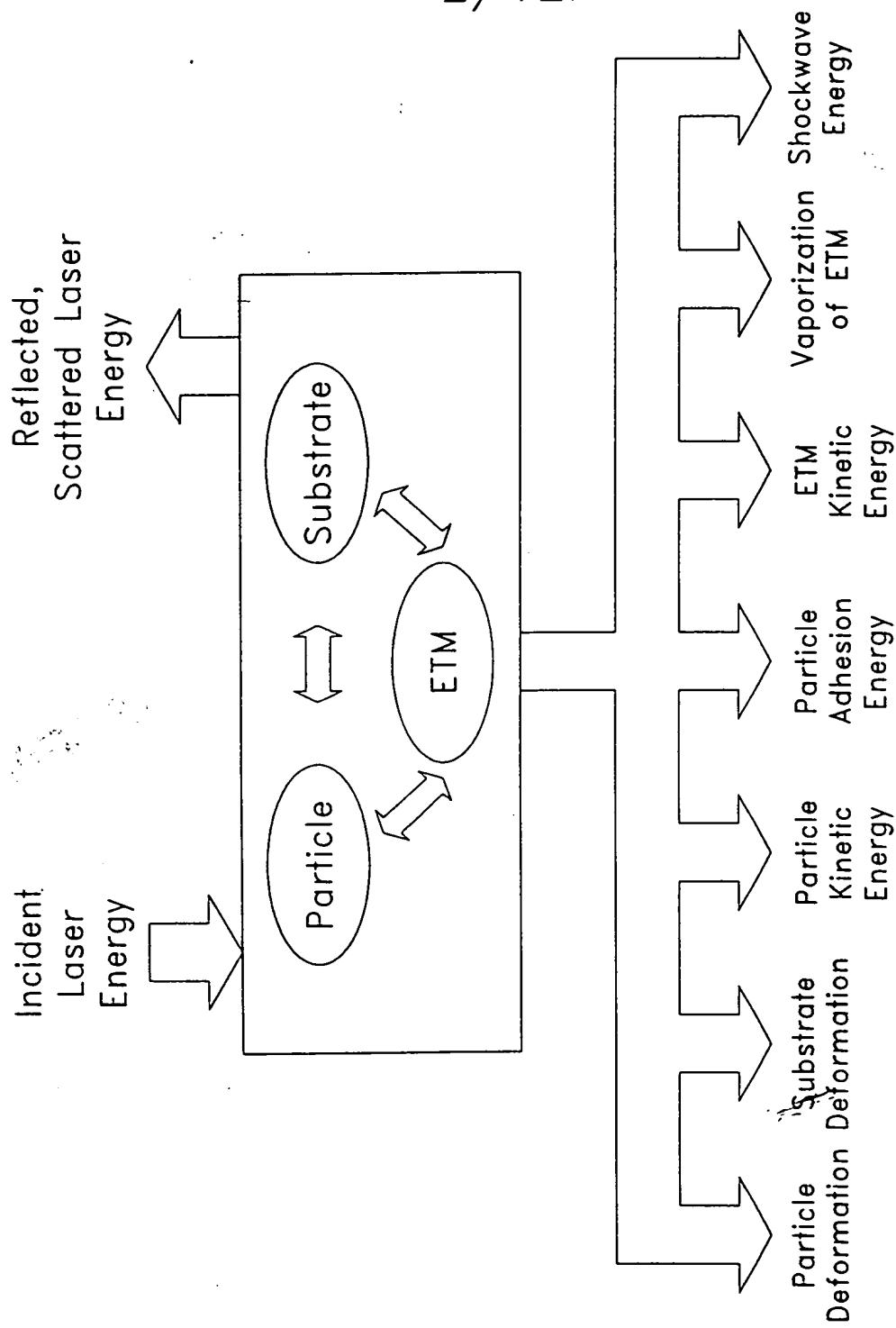


FIG. 2

TC 1100 MAIL ROOM

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Absorption Medium	Particle	ETM	Substrate with ETM	Substrate without ETM
Removal Mechanism	Rapid thermal expansion of particle	Explosive evaporation of ETM	Microbubble formation at liquid/solid interface	Rapid thermal expansion of the substrate
wavelength	$\lambda \ll$ Particle Diameter	$\lambda \gg$ Particle Diameter	$\lambda >$ Particle Diameter or $\lambda <$ Particle Diameter if particle is low	Particle Diameter
Energy Absorption	$\alpha_{\text{particle}} >> \alpha_{\text{substrate}}$	High α_{ETM}	High $\alpha_{\text{substrate}}$	High $\alpha_{\text{substrate}}$
Substrate Damage	-Melting/Ablation of particle	Shockwave, substrate absorption	-Melting/Ablation of particle or substrate -Shockwave in ETM	Melting/Ablation of particle or substrate
Particle Removal Threshold	$\Phi_{th} = 0.01-0.08 \text{ J/cm}^2$ $I_{th} = 1-11 \text{ MW/cm}^2$ $D = 20 \mu\text{m}$	$\Phi_{th} = 0.65-2.2 \text{ J/cm}^2$ $I_{th} = 3-11 \text{ MW/cm}^2$ $t = 0.03-20 \text{ ns}$	$\Phi_{th} = 0.02-0.3 \text{ J/cm}^2$ $I_{th} = 2-600 \text{ MW/cm}^2$ $t = 7-30 \text{ ns}$	$\Phi_{th} = 0.02-0.3 \text{ J/cm}^2$ $I_{th} = 1-30 \text{ MW/cm}^2$ $t = 7-30 \text{ ns}$

TC 2900 MAIL ROOM
FIG. 1 Z
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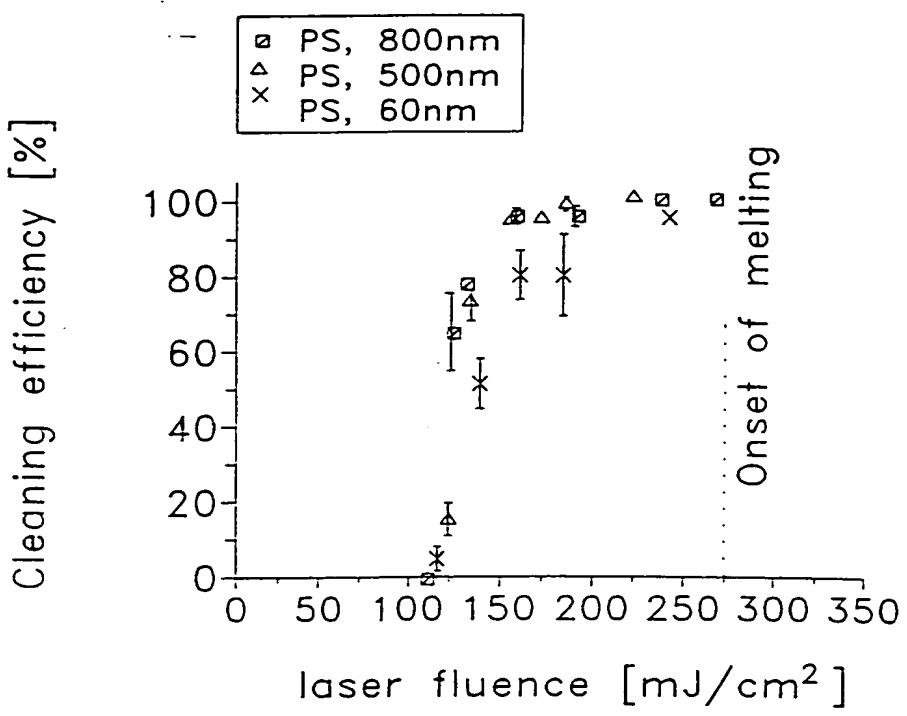
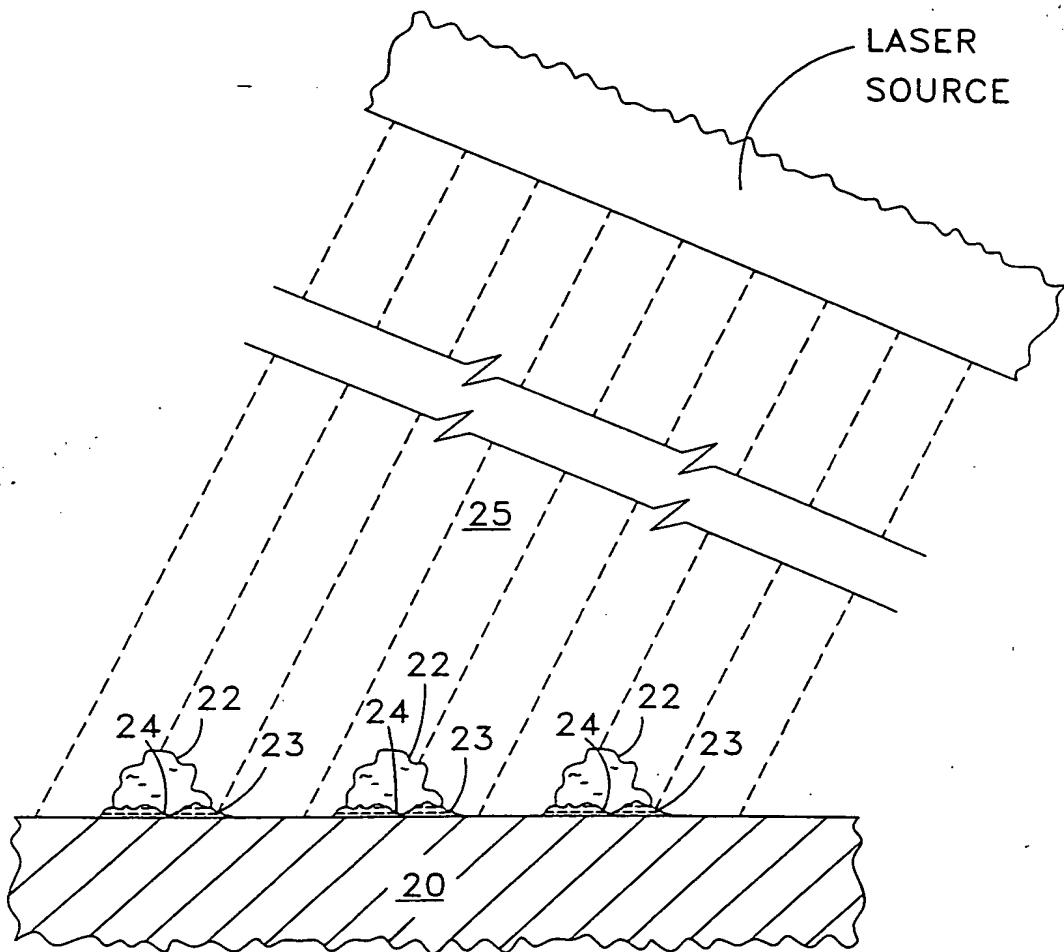


FIG. 4

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TC 1700 MAIL ROOM

FIG. 5

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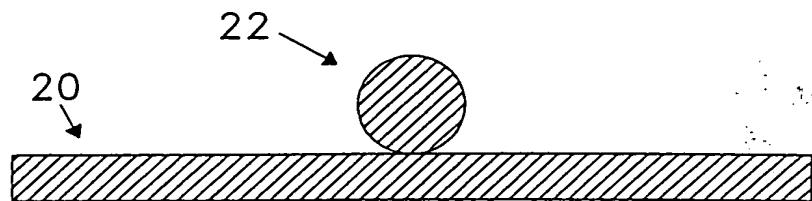


FIG. 6A

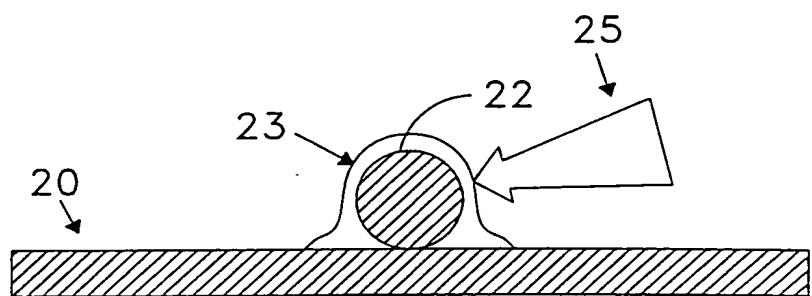


FIG. 6B

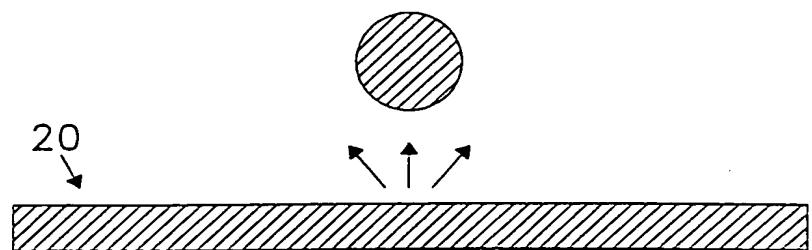


FIG. 6C

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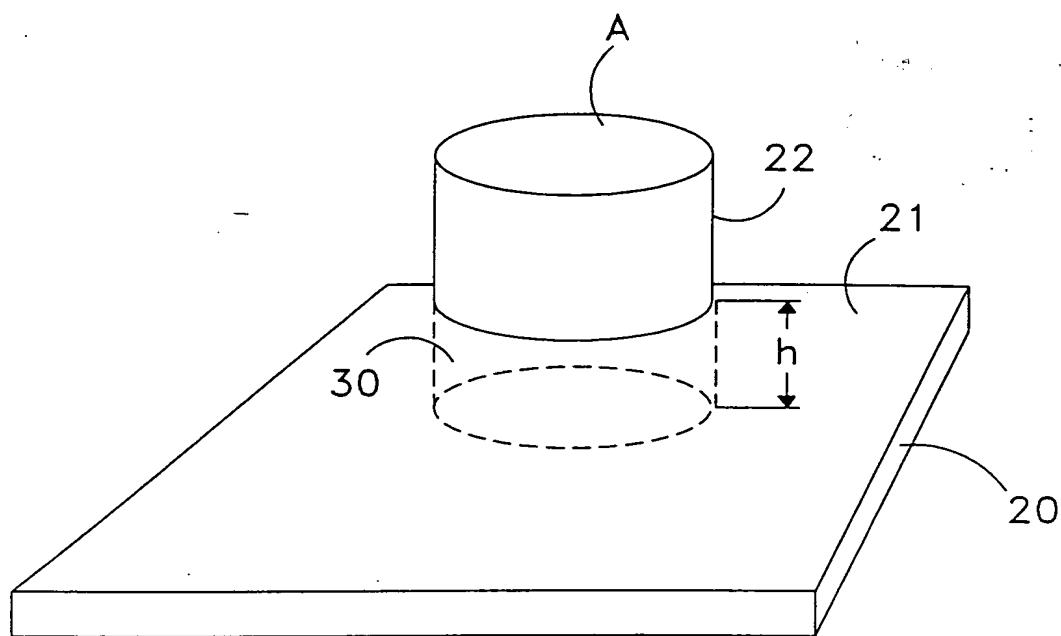


FIG. 7

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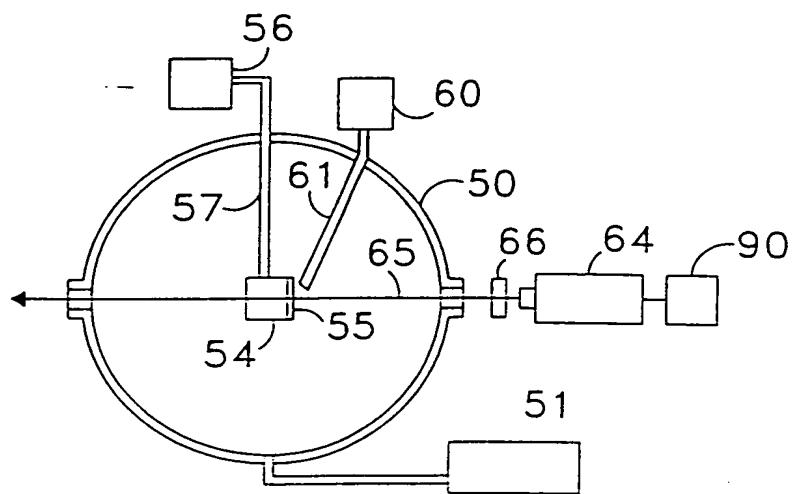


FIG. 8

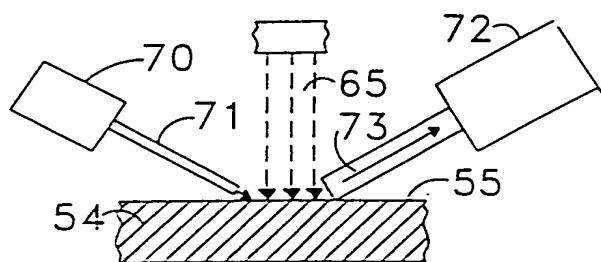


FIG. 9

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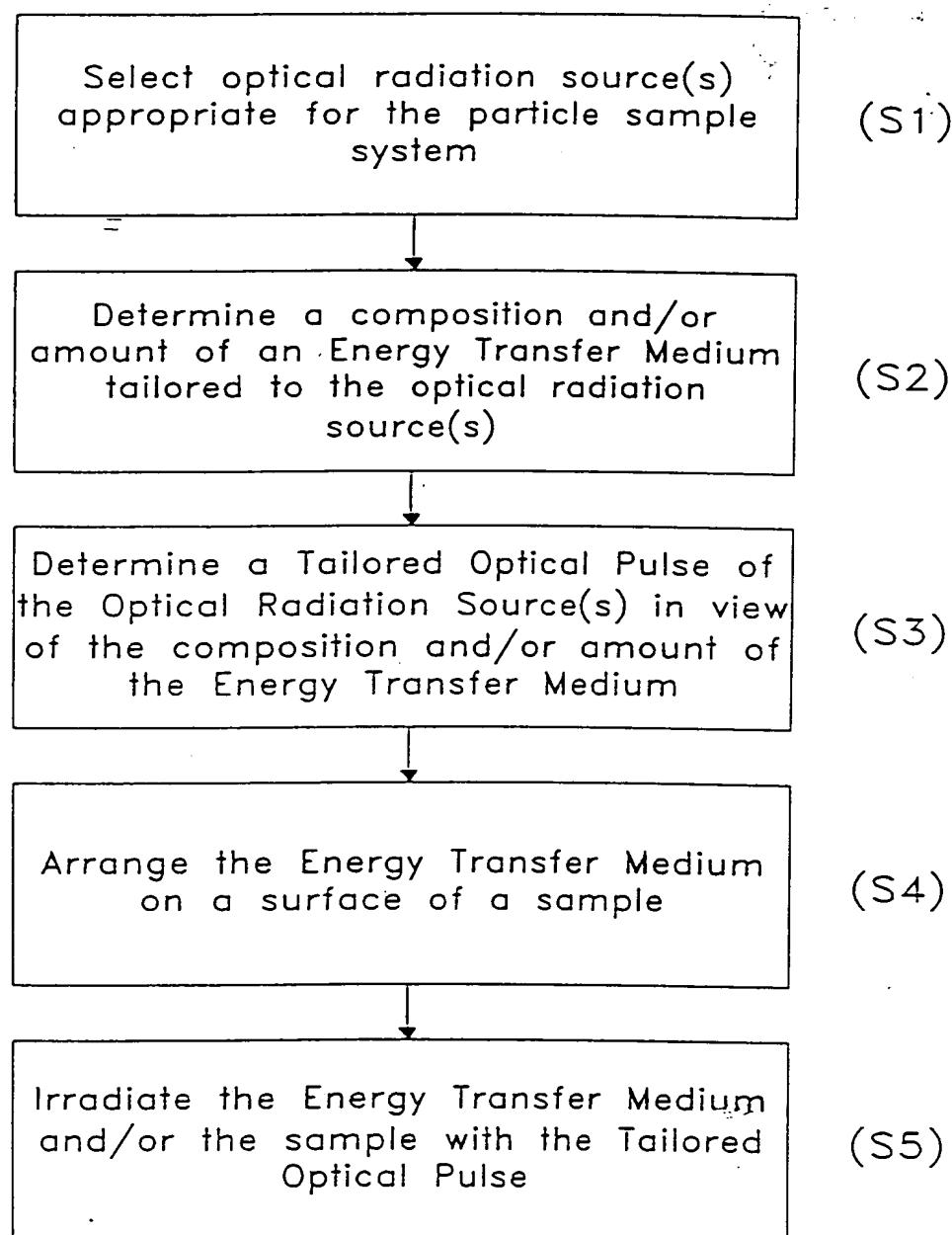


FIG. 10

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100

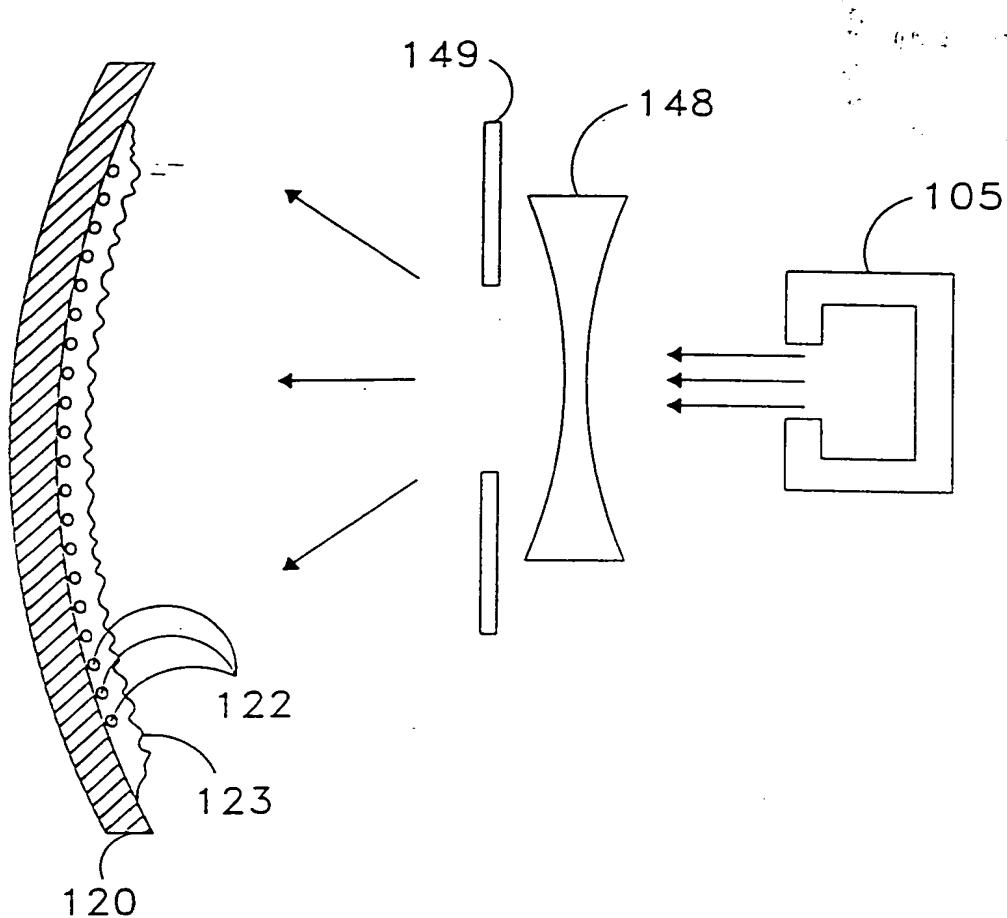


FIG. 11

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100

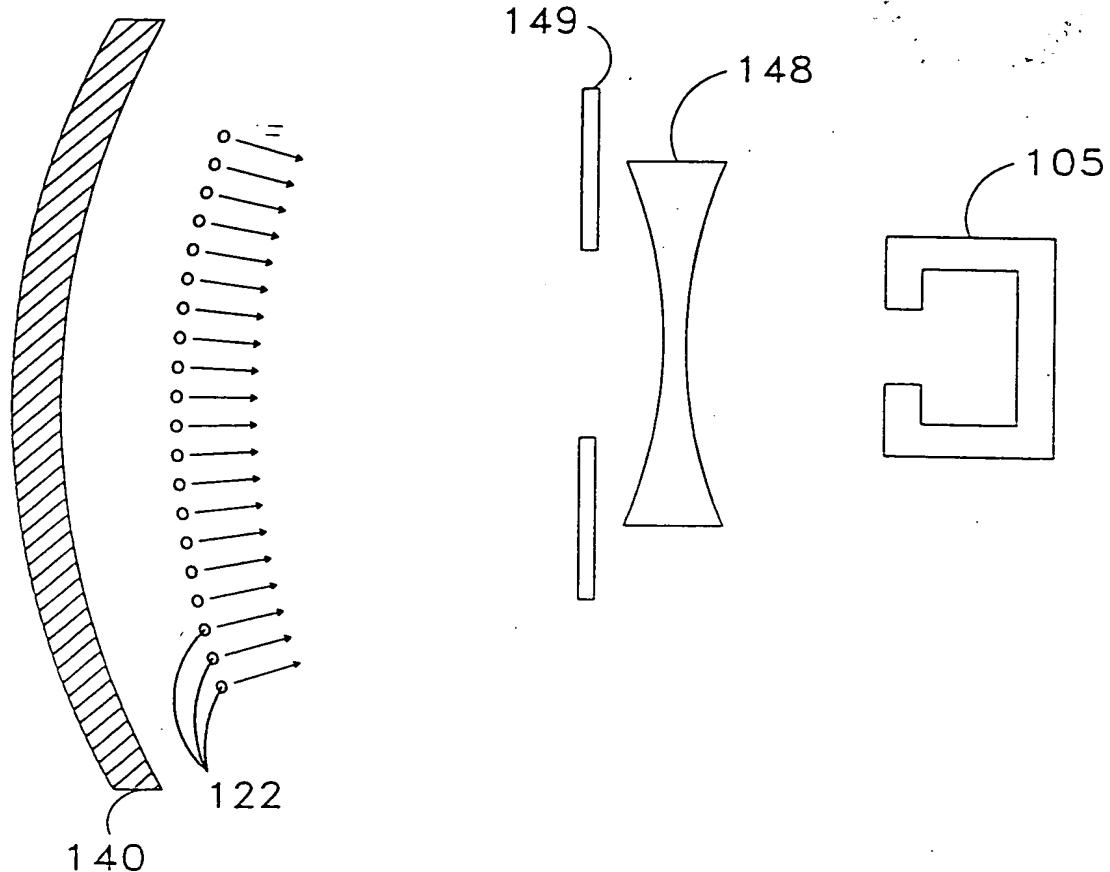


FIG. 12

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200

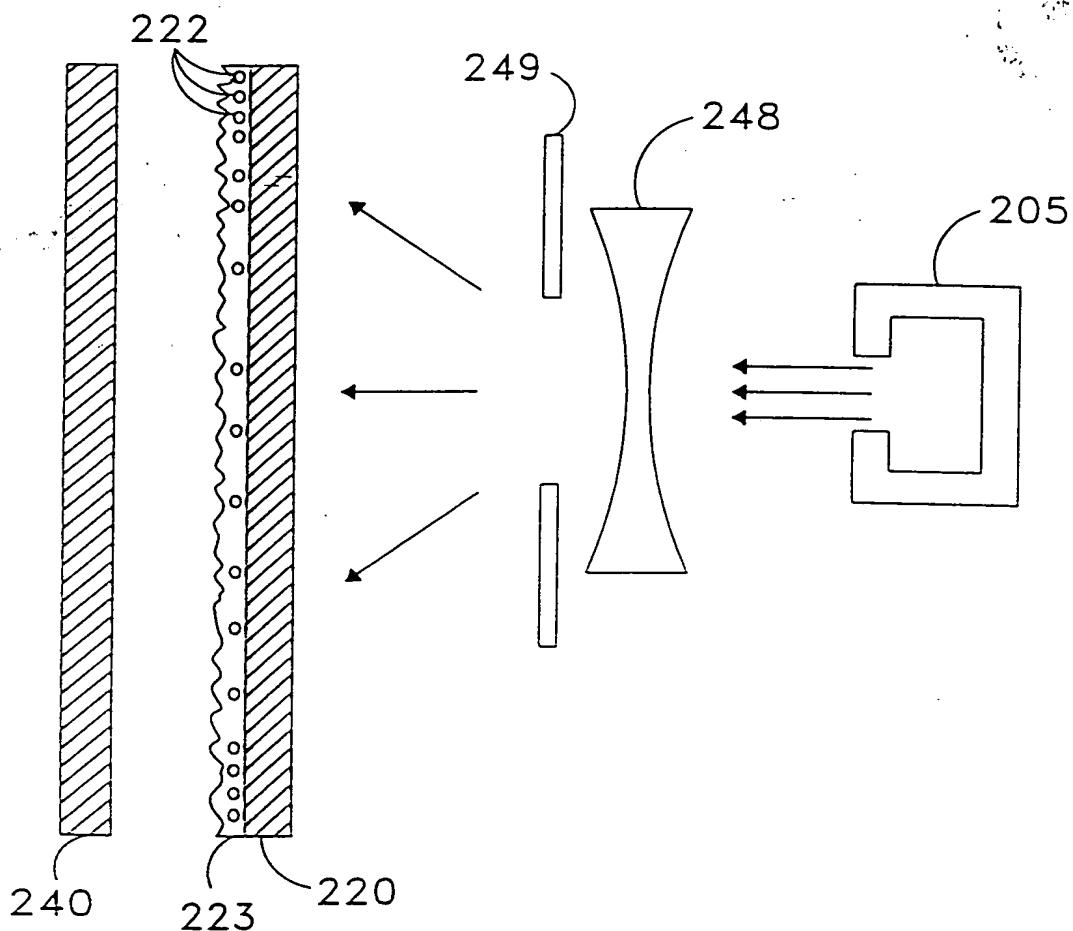


FIG. 13